

REMARKS

This Amendment responds to the Office Action dated March 18, 2004 in which the Examiner rejected claims 1-3, 8-11, 14-15, 17-21 and 23 under 35 U.S.C.

§102(b) and rejected claims 4-7, 12-13, 16, 22 and 24-25 under 35 U.S.C. §103.

Claim 1 claims a method for injection moulding, comprising introducing, under pressure, a melt into a cavity (14) defined by two mould halves (10, 11) of a mould (6), characterised by the steps of joining the mould halves (10, 11) for definition of the cavity (14), by moving at least one of the mould halves (11) along a first axis (A1), and arranging a locking means (7) on the mould (6) by moving along a second axis (A2) extending transversely of said first axis (A1). The locking means (7) has locking surfaces (19) which grasp the mould (6) and its joined mould halves (10, 11). At least one locking surface (19) wedgingly engage a complementarily designed surface (17) of the mould (16) to cause a conversion of the force by which the locking means (7) is arranged on the mould (6), into a locking force for holding the mould halves (10, 11) together in their joined state.

Through the method of the claimed invention arranging a locking means on the mould by moving along a second axis extending transversely to a first axis, having locking surfaces which grasp the mould and having at least one locking surface wedgingly engage a complementarily designed surface of the mould, as claimed in claim 1, the claimed invention provides a method of injection moulding having an improved production capacity. The prior art does not show, teach or suggest the invention as claimed in claim 1.

Claim 2 claims an assembly for injection moulding comprising a mould, first and second sections, and a unit. The mould has two mutually joinable mould halves

which in their joined state define a cavity (14), a first (3) and a second (4) section, and a unit (5) for bringing together said sections (3, 4). The sections (3, 4) in their joined state are intended for locking of the mould (6) with its mould halves (10, 11) in their joined state to allow introduction of a melt under pressure into the cavity (14). The mould (6) is supported by the first section (3), and the second section (4) supports a locking means (7) comprising two separately arranged members (18) which each have a locking surface (19) which is engageable with a complementarily designed surface (17) of the mould (6) by bringing together the sections (3, 4).

Through the structure of the claimed invention having first and second sections in their joined states intended for locking the mould to allow introduction of a melt under pressure, supporting the mould by the first section and supporting a locking means by the second section and having the locking means comprise two separately engaged members which each have locking surfaces which is engageable with a complementarily designed surface of the mould, as claimed in claim 2, the claimed invention provides an assembly for injection moulding with improved production capacity. The prior art does not show, teach or suggest the invention as claimed in claim 2.

Claim 21 claims a mould for an injection moulding assembly (1), comprising two mutually joinable mould halves (10, 11), which in their joined state define at least one cavity (14). The mould is mountable on a first section (3) of the injection moulding assembly (1) and has external surfaces (17), with which locking surfaces (19) of a locking means (7) supported by a second section (4) of the injection moulding assembly (1) are engageable to lock the mould with its mould halves (10, 11) in the joined state.

Through the structure of the mould being mountable in a first section, having a locking means with locking surfaces supported by a second section and having the locking means engage the mould, as claimed in claim 21, the claimed invention provides a mould for an injection moulding assembly with improved capacity. The prior art does not show, teach or suggest the invention as claimed in claim 21.

Claim 22 claims a method for injection moulding comprising the steps of providing a mould (6) with two mutually joinable mould halves which in their joined state define a cavity (14), providing a first (3) and a second (4) section, and providing a unit (5) for bringing together the sections (3, 4). The mould (6) is supported by the first section (3), and the second section (4) supports a locking means (7) bringing together the two sections (3, 4) for holding together joined mould halves (10, 11) of a mould (6). A melt is introduced under pressure into one or more cavities (14) defined by the joined mould halves (10, 11). The sections (10, 11) are brought together by means of a force which is less than the resulting force which, during introduction of the melt into one or more cavities (14), acts to divide the mould halves (10, 11).

Through the method of the claimed invention having a mould supported by a first section, a locking means supported by a second section and bringing together the sections by means of a force which is less than a resulting force which acts to divide the mould halves as claimed in claim 22, the claimed invention provides a method of injection moulding with increased capacity. The prior art does not show, teach or suggest the invention as claimed in claim 22.

As indicated above, claim 22 has been amended to make explicit what is implicit in the claim. Applicant respectfully submits that the amendment is unrelated to a statutory requirement for patentability.

Claims 1-3, 8-11, 14-15, 17-21 and 23 were rejected under 35 U.S.C. § 102(b) as being anticipated by *Fink et al* (U.S. Patent No. 4,344,601).

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. § 102(b). The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, applicant respectfully requests the Examiner withdraws the rejection to the claims and allows the claims to issue.

Fink et al appears to disclose an apparatus for the production of molded articles made of plastic or rubber in at least one molding station having at least one mold consisting of upper and lower halves clamped together in the closed position by means of elastic elements. (col. 1, lines 6-10) In the embodiment of FIG. 1 the molding station 20 is in the form of a box. A mold 21 consisting of an upper mold 22 and a lower mold 23 is placed between upper and lower crossbars 24, 25. The crossbars are connected with each other by side plates 26, 27 which exert the tensile clamping forces, and which have windows 28 which form side bars 29 and 30 in the corners. The necessary high closing or holding force is exerted on the mold 21 by elastically expanding the side bars 29, 30 during the insertion of the mold and then releasing them. This produces a considerable tensile force in the side bars which urges the crossbars 24, 25 towards each other. To facilitate the opening and closing of the mold 21 as well as its removal from the molding station 20, a special locking element is provided which consists of two interacting chuck wedges 31 and 32. In their tensioning position according to FIG. 1 they are placed against each

other along their tapered surfaces 33. To open the mold when the side bars 29, 30 are expanded or stretched the wedges 31, 32 are pulled out laterally in opposite directions. Pressure cylinders can be used for this purpose, not shown. To close the mold and produce the necessary clamping force, the wedges are inserted with the side bars elastically expanded. The wedges then maintain the clamping force when the side bars are released. The elastic expansion of the side bars 29, 30 is implemented by a tensioning unit, not shown, which engages mushroom-like dogs 34, 35 on the upper and lower sides of the crossbars 24, 25 and acts upon them in opposite directions. (col. 2, lines 36-68)

Thus, *Fink et al* merely disclose a locking element consisting of two interacting chuck wedges 31 and 32 which are placed against each other along their tapered surfaces 33. Nothing in *Fink et al* shows, teaches or suggests a) locking means having locking surfaces which grasp a mould as claimed in claim 1, or b) at least one locking surface wedgingly engaging a complementarily designed surface of a mould to cause a conversion of a force into a locking force for holding the mould halves together in their joined state as claimed in claims 1 and 2. Rather, wedges 31 and 32 merely engage one another and do not grasp a mould.

Also, the conversion of the force applied to the wedges in one direction to the force onto the mould in another direction, as claimed in claim 1, is not accomplished by *Fink et al* since the wedges 31, 32 are placed in position before the elongation of the side bars is released.

Additionally, *Fink et al* merely discloses elastically expandable side bars 29, 30 which exert high closing or holding force on a mould by elastically expanding during the insertion of the mould and then releasing them. Thus nothing in *Fink et al*

shows, teaches or suggests a locking means which moves along a second direction as claimed in claim 1. Rather, *Fink et al* merely discloses elastically expanding side bars 29 and 30 during insertion of the mould and releasing them.

Furthermore, as discussed above, *Fink et al* merely discloses wedges 31 and 32. Thus nothing in *Fink et al* shows, teaches or suggests a mould supported by a first section and a locking means supported by a second section as claimed in claim 2. Also, nothing in *Fink et al* shows, teaches or suggests that the locking means comprise two separately arranged members each having a locking surface which is engageable with a complementarily designed surface of the mould as claimed in claim 2. Rather, the wedges 31 and 32 of *Fink et al* are merely placed against each other along their tapered surfaces.

On the other hand, *Fink et al* merely discloses side bars 29 and 30 which expand. However, these side bars do not support a locking means comprising two separately arranged members which each have a locking surface which is engageable with a complementarily designed surface of the mould as claimed in claim 2. Rather, the side bars 29 and 30 elastically expand during insertion of the mould and then release.

As discussed above, neither the wedges 31, 32 nor side bars 29 and 30 of *Fink et al* shows, teaches or suggests a first section having a mould mounted thereon and a locking surface of a locking means supported by a second surface engageable with external surfaces of the mould to lock the mould halves in their joined state as claimed in claim 21. Nothing in *Fink et al* shows, teaches or suggests that either the side bars 29, 30 or wedges 31, 32 engage with external surfaces of a mould to lock the mould in their joined state.

Since nothing in *Fink et al* shows, teaches or suggests the features as discussed above with regard to claims 1, 2 and 21, applicant respectfully requests the Examiner withdraws the rejection to claims 1, 2 and 21 under 35 U.S.C. §102(b).

Claims 3, 8-11, 14-15, 17-20 and 23 depend from claims 1, 2 and 21 and recite additional features. Applicant respectfully submits that claims 3, 8-11, 14-15, 17-19 and 23 would not have been anticipated by *Fink et al* at least for the reasons as set forth above. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claims 3, 8-11, 14-15, 17-19 and 23 under 35 U.S.C. §102(b).

Claims 4-7, 12-13, 16 and 22 were rejected under 35 U.S.C. §103 as being unpatentable over *Fink et al*.

As discussed above, *Fink et al* merely discloses chuck wedges 31 and 32 which interact with one another along tapered surfaces 33 and side bars 29, 30 which expand during insertion of the mould and then release. Nothing in *Fink et al* shows, teaches or suggests a) a mould supported by a first section, b) a second section supporting a locking means, and c) bringing together the first and second sections for holding together the mould halves of a mould as claimed in claim 22. Rather, *Fink et al* merely discloses interacting chuck wedges 31, 32 and elastically expandable side bars 29, 30.

Since nothing in *Fink et al* shows, teaches or suggests the features as claimed in claim 22, applicant respectfully requests the Examiner withdraws the rejection to claim 22 under 35 U.S.C. §103.

Claims 4-7, 12-13 and 16 recite additional features. Applicant respectfully submits that claims 4-7, 12-13 and 16 would not have been obvious within the

meaning of 35 U.S.C. §103 over *Fink et al* at least for the reasons as set forth above. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claims 4-7, 12-13 and 16 under 35 U.S.C. §103.

Claims 24-25 were rejected under 35 U.S.C. §103 as being unpatentable over *Fink et al* and further in view of *Wimberger-Friedl et al* (U.S. Patent No. 6,665,192).

Applicant respectfully traverses the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, applicant respectfully requests the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, since nothing in *Fink et al* shows, teaches or suggests the primary features as claimed in claim 2, applicant respectfully submits the combination of the primary reference to *Fink et al* with the secondary reference will not overcome the deficiencies of the primary reference. Therefore, applicant respectfully requests the Examiner withdraws the rejection to claim 25 under 35 U.S.C. §103. Applicant respectfully points out to the Examiner that claim 24 was canceled in the Preliminary Amendment.

The prior art of record, which is not relied upon, is acknowledged. The references taken singularly or in combination do not anticipate or make obvious the claimed invention.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested contact, by telephone, the applicant's

undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, applicant respectfully petitions for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

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Date: June 17, 2004

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